IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants	:	Rzhetsky et al.	
Serial No.	:	10/073,463	Examiner: Eric S. DeJong.
Filed	:	February 11, 2002	Group Art Unit: 1631
For	:	METHOD FOR PREDICTION OF MOLECULAR INTERACTION NETWORK	

PRE-APPEAL BRIEF REQUEST FOR REVIEW

Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Applicants respectfully request review of the repeated rejections of claims 36-45 under 35 U.S.C. § 112 as being indefinite and claims 36-37 under 35 U.S.C. § 101 as directed to non-statutory matter in the above-identified application, and present the following Remarks for consideration. A Notice of Appeal is being filed with this request.

REMARKS

Indefiniteness rejections of Claims 36-45

The indefiniteness rejections are improper and without basis as the Office Action fails to analyze the definiteness of claim language "in light of: (A) the content of the particular application disclosure; (B) The teachings of the prior art; and (C) The claim interpretation that would be given by one possessing the ordinary level of skill in the pertinent art at the time the invention was made." See MPEP § 2106 V. A and § 2713.02. Further, the indefiniteness rejection is improper as the scope of the invention can be

determined from the language of the claims with a reasonable degree of certainty. See Id.

Applicants address the Office Action allegations of indefiniteness of numerous claim terms below:.

Office Action page 3 lines 11- 14: it is unclear what the recited terms "attraction probabilities" and "probabilities of attraction" actually represent.

Applicants note, from common English usage, the two equivalent terms in singular have the same clear and definite meaning: "probability of attractive interaction between entities," which will be readily recognized by a person of ordinary skill in the art.

Further, the specification describes and defines the terms in the context of interacting molecules (e.g., proteins) and their network representations. (See e.g., ¶[0027], "probability of getting attracted" and "attraction probability"). Eq. 5 represents "attraction probability" in terms of domain attraction probabilities. Further, Eq. 6 represents "domain attraction probabilities" in terms of neighboring domain occurrences/counts. (See e.g., ¶¶[0027]-[0030]).

Office Action page 3 lines 14- 16: Claims and specification provide no clear definition of what features or values from known molecular interaction data are relied upon to determine "attraction probability."

This improper allegation overlooks Eqs. (5) and (6), which provide explicit and definite representations of (molecule -molecule) attraction probability as a function of (molecular) domain-domain interaction data. Further, the specification gives specific examples in which the molecular interaction data used for the attraction probability determination is known/ experimental domain-domain interaction data. (See e.g., ¶[0006], ¶[0032], ¶[0037],¶[0039], ¶[0039], ¶[0046], ¶[0056], etc.), FIG. 2, FIG. 7, FIG. 8, FIG. 12, etc.).

Office Action page 3 line 26 -page 4 line 2: "[specification] portion . . . does not provide explanation regarding what experimental data is used to determine probabilities of "attraction" between domains of a protein."

Applicants note that the specification provides explicit mathematical expressions (e.g., Eq. 6, Eq. 14) for domain-domain attraction probability, and explicit description of how domain-domain attraction probabilities are obtained from experimental data. (See e.g., ¶ [0020] paragraph lines 10-12: "quantifying from data taken from known networks, the frequency with which a domain in one protein is observed immediately upstream or downstream of domains in another protein"). Further, the specification describes how numeric values of domain-domain attraction probabilities are obtained by fitting experimental protein-protein interaction data (See e.g., ¶ [0032], ¶[0039],¶[0045], ¶[0059],¶[0060], FIG. 12B, etc.).

Office Action page 4 line 2 -6: "It remains unclear if "attraction probabilities" . . . is intended to represent an energetic relationship . . . or . . . an abstract correlation between the sequences . . . of domains within interacting molecules." Office Action page 6 lines 16-19: "determining probabilities of molecular interactions" is indefinite because "probabilities of attraction" is indefinite. Office Action page 5 lines 5-11: "edge probability" is unclear because "attraction probabilities" is unclear.

Applicants submit that these allegations are moot in view of the foregoing discussion of the meaning of "attraction probabilities". Further, with respect to the first of these allegations applicants note that "energetic relationships" and "correlations between sequences/structure of domains" can be equivalent descriptions of the same physics as is readily understood in the art.

Office Action page 4 lines 13 -19 and page 4 line 21- page 5 line 2: It is unclear whether recitations of " known [ ] biological system networks" refer to "actual biological networks" or "some other neural network system."

Applicants submit that this allegation has no basis. In the relevant art, "*actual*

biological networks" are represented as "*neural networks*." (See e.g., ¶ [0020], ¶ [0022]). Further, applicants note that the operative adjective "known" is used in the claims with its common meaning. The specification describes "known networks' data (see e.g., ¶ [0020], [0022]), published "interactions between proteins". . . "backed by experimental data" (see e.g., ¶ [0028]), and known "biological networks" (see e.g., ¶[0032], ¶[0037], ¶[0044], etc.).

Office Action page 5 lines 15-19: it is unclear if "distribution of edges" and "edge distribution probability" are related to or encompassed by "edge probability" (P(E)).

Applicants submit that this allegation has no basis. Claim 36 and the specification explicitly define P(E) as the probability of a "single" network with a "particular" edge set E. (See e.g., ¶ [0023] page 10 lines 3-5). Further, claim 36 and the specification clearly define P(topology) as the "probability of a particular distribution of edges [edges of a particular edge set E] going into and out of each vertex of the [single] network. (See e.g., ¶ [0024], Eqs. 2 and 3). The specification also states that P(E) and the edge distribution probabilities are the result of two separate stochastic steps and are separate multiplicative factors contributing to the probability of sampling any given network. (See ¶ [0025], Eq. 4).

Office Action page 6 lines 10-11: The meaning of "posterior probability" cannot be determined.

This allegation has no basis. Applicant's previous Reply points out that in the pertinent art the term "posterior probability" has a well recognized meaning: "conditional probability. Applicants further note that Eq 10. uses the standard mathematical symbol $P(A \mid B)$ to denote the posterior probability of A given B (i.e. probability of A conditional on B). This standard mathematical symbol is widely used and readily recognized in the art.

Office Action page 7 lines 1-6: "further processor" is unclear because it lacks antecedent basis.

Applicants note that a processor is an inherent component of a computer. MPEP §

2173.05(e) provides "[i]nherent components of elements recited have antecedent basis in the recitation of the components themselves," and "[i]f the scope of a claim would be reasonably ascertainable by those skilled in the art, then the claim is not indefinite." Applicants submit that the meaning of the limitation "user or further processor" is reasonably ascertainable by those skilled in the art.

Non statutory matter rejections of Claims 36-37

Applicants submit that claim 36 provides a useful, concrete and tangible result (i.e. a molecular interaction network representation). Claims 36 conforms to requirements of § 101 even without an express "providing to user" clause (which in the undersigned's recent experience/understanding is no longer required by the USPTO). However, applicants request entry of an Examiner's Amendment to claim 36 as follows: "providing said molecular interaction network representation to a user," if the Examiners find that such Amendment would narrow disputed issues.

For at least the foregoing reasons, the rejections of claims 36-45 should be withdrawn.

Respectfully submitted,

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